



Information Session:

VACCINATION: FACTS & MYTHS

Part II

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BENEFITS OF VACCINES

Economic benefits of vaccines...



Are the most cost-effective health care intervention available

Initiative	Cost per life-year saved (US\$)*
Childhood immunization	<0 (cost saving)
Pneumococcal vaccine for seniors	<0 (cost saving)
Seat belts	69
Universal flu vaccination	140
Breast cancer screening (women at 50)	810
Home smoke detectors	920
Drinking water chlorination	3,100
Hypertension screening (men >60)	11,000
Home dialysis	20,000
Neonatal intensive care for low birth weight infants	270,000

*Canadian Public Health Association, *The Value of Immunization in the Future of Canada's Health System*, 2001, www.immunize.cpha.ca

Ehreth, J, *The Value of Vaccines: A Global Perspective*, 2001
Harvard Center for Risk Analysis, *Comprehensive League Table of Cost-Utility Analyses Published Through 1997 with Ratios Converted to 1998 US Dollars*, Harvard School of Public Health,

www.hsph.harvard.edu/organizations/hcra/cuadatabase/intro.html

Social benefits of vaccines



Infectious diseases:

- ❖ **In last century, leading cause of death worldwide**
- ❖ **Today, cause < 5% of deaths in Canada**

In last 50 years, immunization saved more lives in Canada than any other health intervention.

Social benefits of vaccines



Vaccine Preventable Disease	Cases in Canada before vaccine	Cases in 2001*
Polio	20,000	0
Diphtheria	9,000	0
Rubella	69,000	23
Mumps	52,000	73
<i>Haemophilus influenzae b</i> (Hib)	2,000	41
Pertussis (Whooping Cough)	25,000	2,477
Measles	300,000	33
Total	477,050	2,647

* Provisional data from the Division of Immunization & Respiratory Diseases, Health Canada
Source: Canadian Immunization Awareness Program

Social benefits of vaccines



Disease	Unadjusted Years of Life Saved with Vaccines
Tuberculosis	77,000,000
Hepatitis B	76,000,000
Measles	71,000,000
Tetanus	56,000,000
Polio	42,000,000
Pertussis	39,000,000
<i>Haemophilus influenza</i> type b	19,000,000
Diphtheria	3,900,000
Varicella	1,600,000

* Ehreth, J, *The Value of Vaccines: A Global Perspective*, 2001

Deaths from vaccine-preventable diseases*



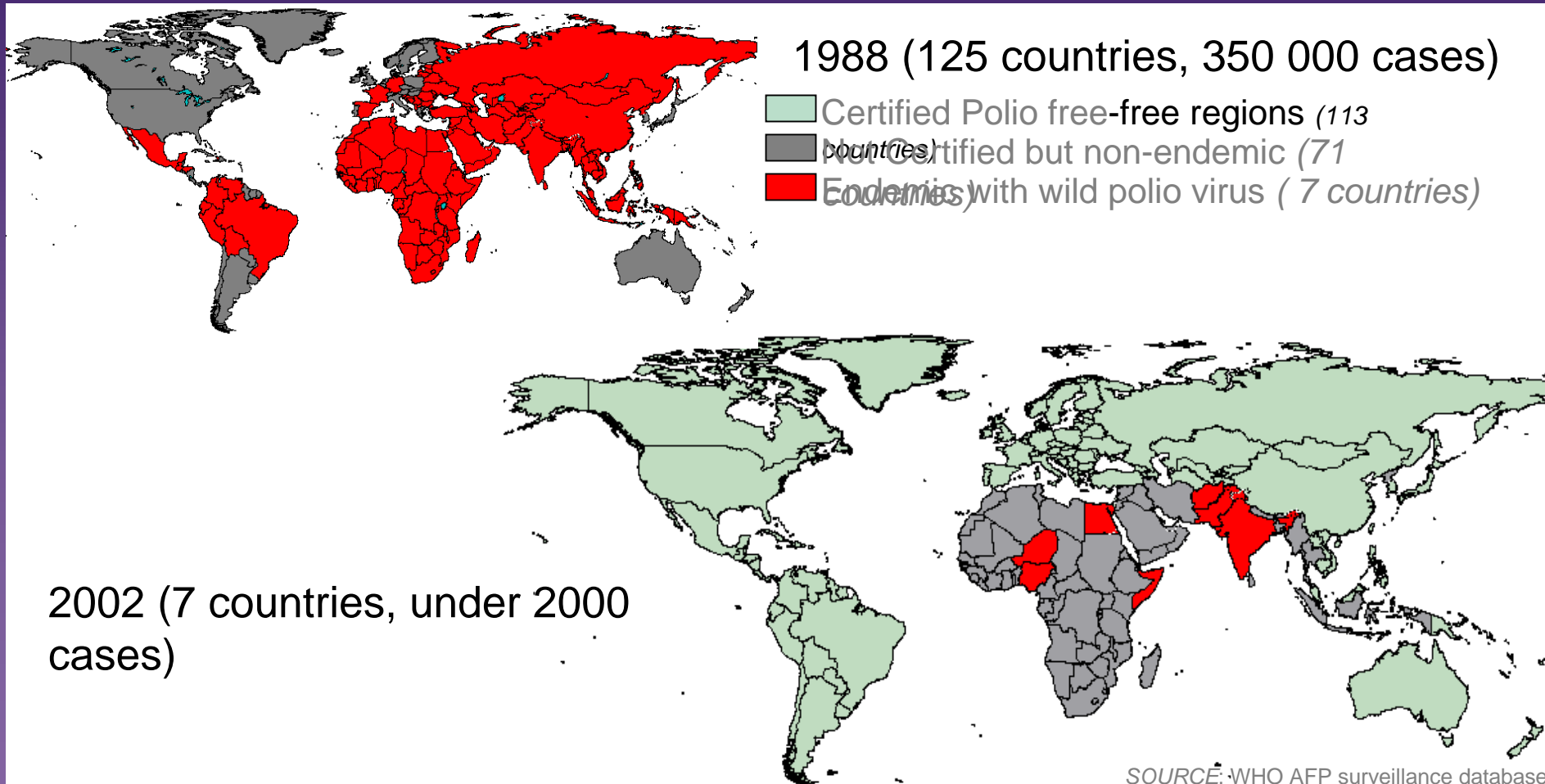
Disease	Worldwide Annual Deaths (approx)
Hepatitis B	900,000
Measles	888,000
Tetanus	410,000
<i>Haemophilus influenza</i> type b	400,000
Pertussis	346,000
Yellow Fever	30,000
Diphtheria	5,000
Polio	720
Total	2,979,720

* Global Alliance for Vaccines and Immunization, www.vaccinealliance.org

Social benefits of vaccines



Since GPEI was initiated in 1988 polio has been reduced to being endemic in only a handful of countries.



SOURCE: WHO AFP surveillance database

data from 191 WHO member states

Social benefits of vaccines



Polio: Last Cases



**Americas Region
Luis Fermin Tenorio
Peru 1991**



**European Region
Melik Minas
Turkey 1998**

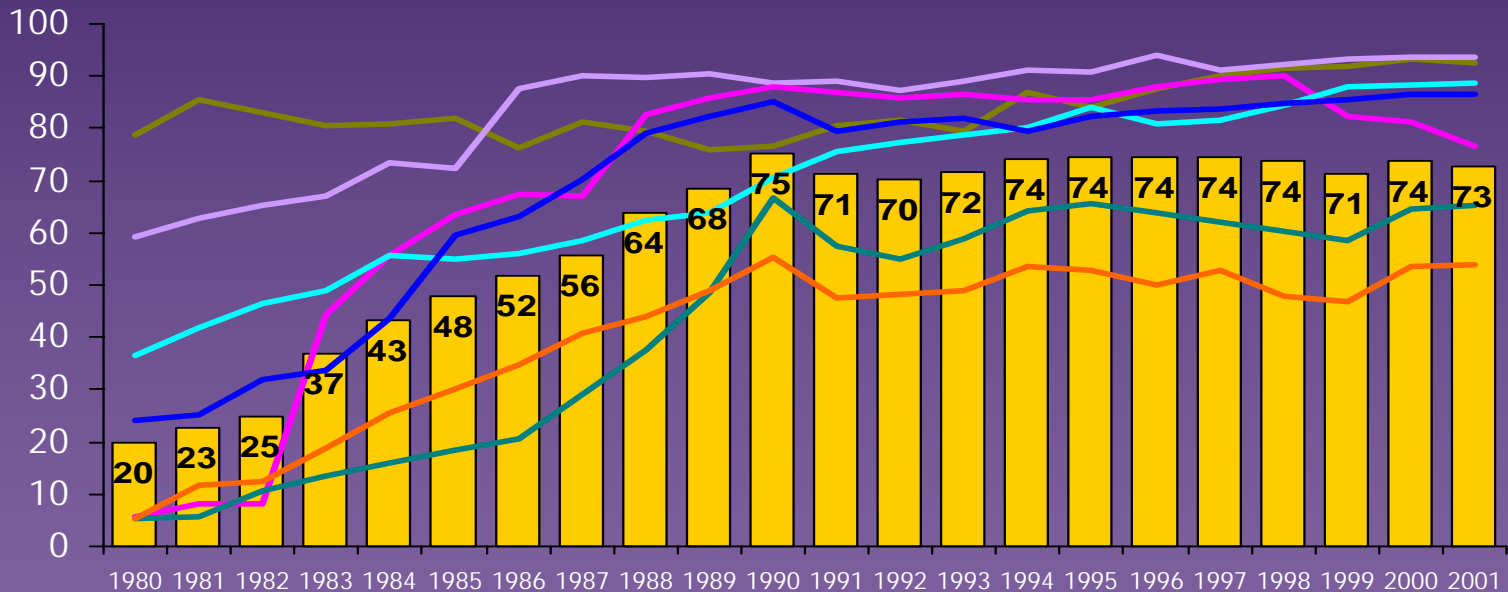


**Western Pacific Region
Mum Chanty
Cambodia 1997**

Social benefits of vaccines



Global coverage increased rapidly during the 80s (as represented by DPT 3 coverage), then flattened out in the 90s. While EPI significantly improved immunization in developing countries, unfortunately where the majority of the world's children live immunization is still below global levels.

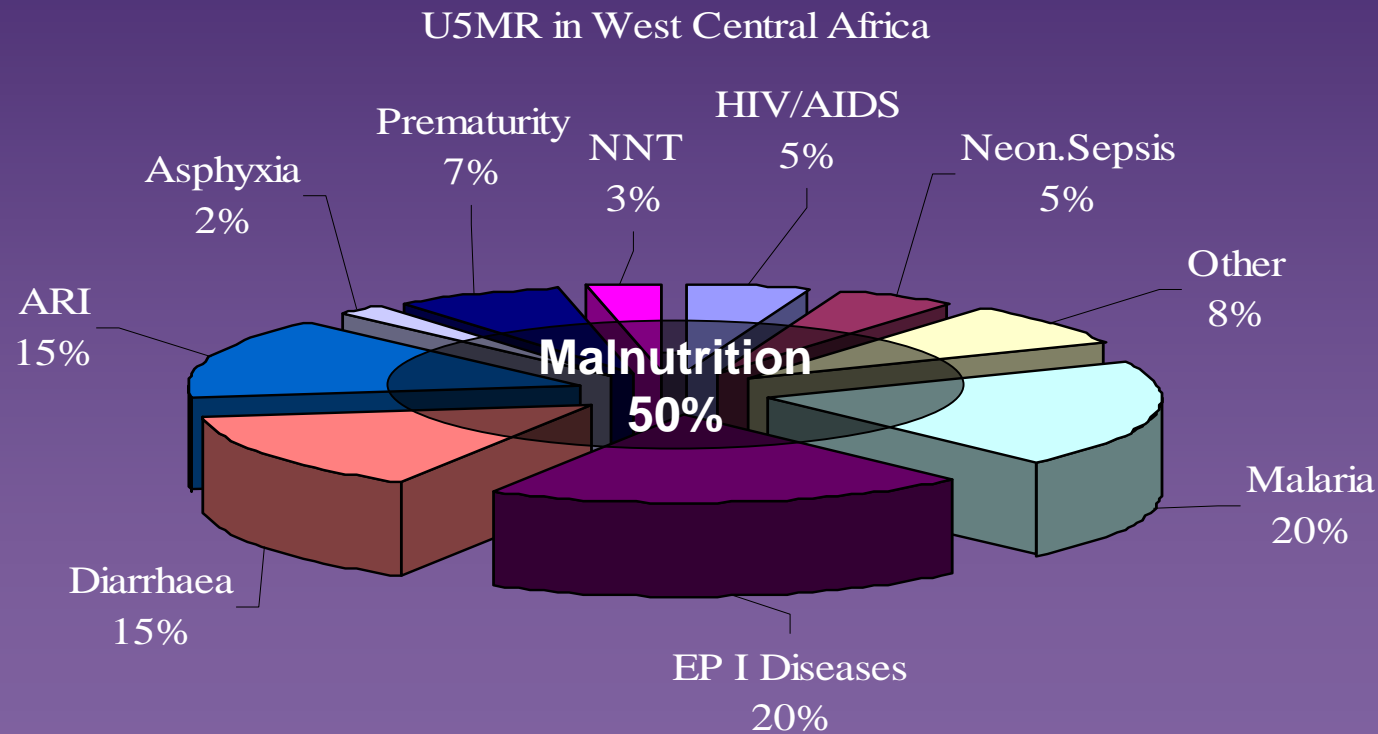


1980-2001, DTP3 coverage

Social benefits of vaccines



The primary causes of death in the worst off region are still infectious diseases , with 20% vaccine preventable, occurring on top of malnutrition.



A photograph of a hospital room, likely an intensive care unit, with several beds and gurneys. The image is heavily tinted with a blue color. Overlaid on the image is the text "PUBLIC HEALTH INITIATIVES ARE UNDER FIRE" in a large, bold, yellow font with a red outline. The text is arranged in three lines, centered horizontally.

**PUBLIC HEALTH
INITIATIVES ARE
UNDER FIRE**

Immunization under fire



**Many members of the public
have become complacent
about vaccine-preventable
diseases**

Anti-vaccine movement



Risk of complacency



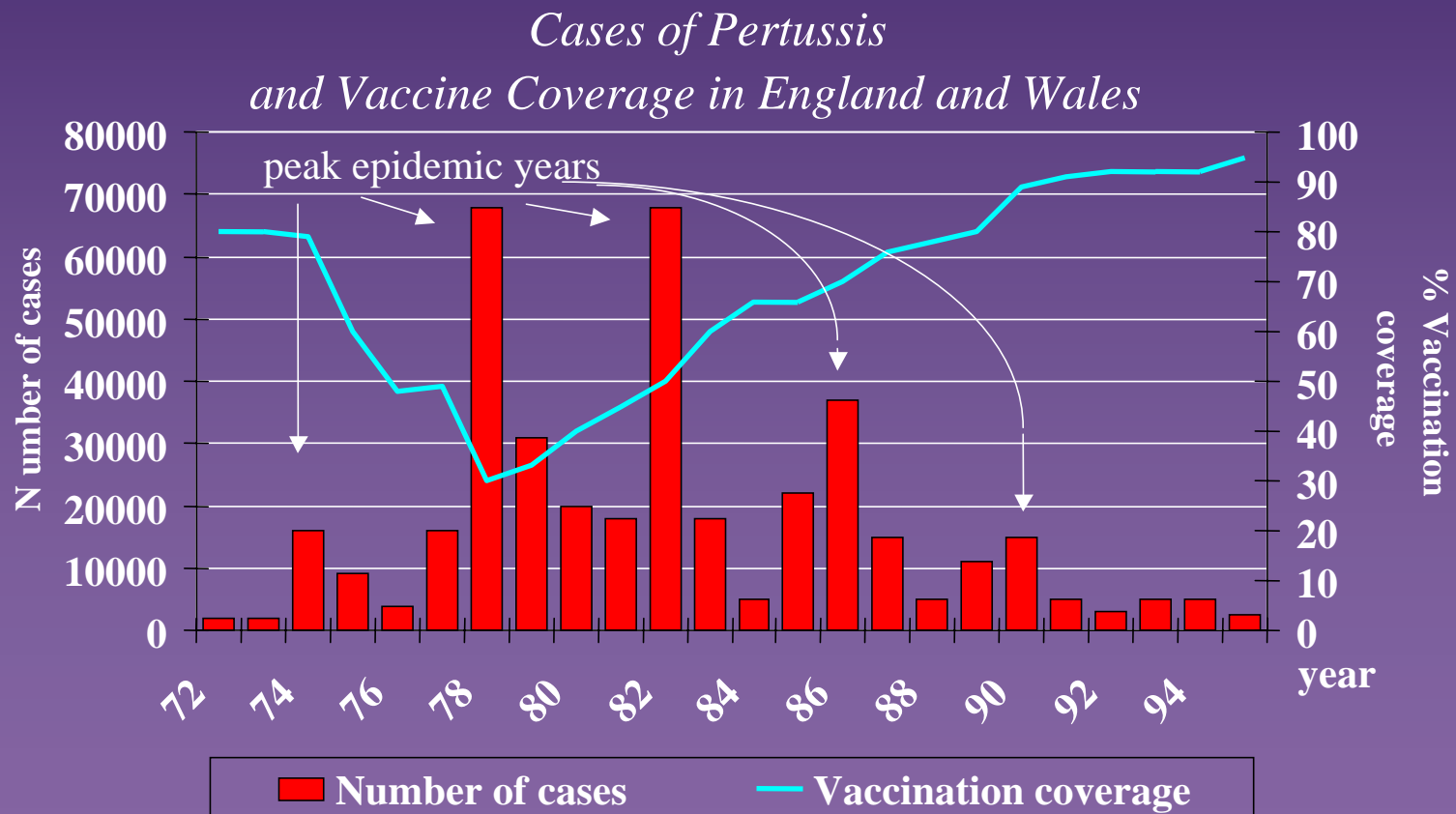
Canadians made 4.8 million trips to overseas countries in 2001, 1.7 million trips to tropical destinations (Source: Stats Canada).

Hepatitis b, diphtheria, polio, and meningitis are some infectious diseases that may be acquired beyond Canada's borders.

Effects of complacency



1974 Britain: when pertussis vaccination dropped, pertussis cases rose to almost 70 000 cases (36 deaths) in 1978.



Effects of complacency



1974 Japan: vaccination rates declined from 70% to 20-40%, resulting in 13 000 pertussis cases (41 deaths) in 1979.

1989 former Soviet Union countries: low diphtheria coverage resulted in 50 000 diphtheria cases (1,700 deaths) in 1994.